THE SPECIAL OSPREY:

IMPACT ON SPECIAL OPERATIONS DOCTRINE

BY

THOMAS J. TRASK

A THESIS PRESENTED TO THE FACULTY

OF THE SCHOOL OF ADVANCED AIRPOWER STUDIES FOR

COMPLETION OF GRADUATION REQUIREMENTS

SCHOOL OF ADVANCED AIRPOWER STUDIES

AIR UNIVERSITY

MAXWELL AFB, ALABAMA

JUNE 1996

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Contents

Page

DISCLAIMER ii

LIST OF ILLUSTRATIONS iv

ABSTRACT v

HOW TO IMPACT DOCTRINE 1

THE HARRIER EXAMPLE 15

SOF TRADITIONAL MISSION AREAS 27

NEW SOF MISSION AREAS 44

CONCLUSION 53

CHRONOLOGY OF EVENTS 60

AIRCRAFT CHARACTERISTICS 61

BIBLIOGRAPHY 63

Illustrations

Page

Figure 1. Artist Concept of CV–22 in a typical Hostage Rescue scenario. v

Figure 2. The CV–22 2

Figure 3 Two MV–22s in Formation 6

Figure 4. MV–22 in hover configuration. 9

Figure 5. World map of CV–22 deployment capability. 40

Figure 6. Side and front dimensions. 61

Figure 7. Folded dimensions. 61

Abstract

Figure 1. Artist Concept of CV–22 in a typical Hostage Rescue scenario.

The CV–22 Osprey will be the next generation Special Operations insertion and extraction platform. The Air Force Special Operations Command will begin receiving the modified Marine Corps MV–22's in 2002, with full operational capability scheduled for 2010. The CV–22 will replace 89 various Special Operations C–130s and helicopters. Historically, there is a tendency to use new weapons systems in a role that others had previously performed, even if the capabilities are not identical. This does not always take

advantage of what may be a new system's unique capabilities. The purpose of this paper is to examine some of the doctrinal issues that arise from the addition of the CV–22 to the SOF arsenal; to look at some historical data on cases where similar evaluations were called for and consider their results; and to consider what measures are being discussed or proposed currently. The paper will focus on the following question:

> What changes in Special Operations doctrine should be made in the future, due to the addition of Tilt–Rotor technology (in the form of the CV–22 Osprey), to maximize and enhance the capabilities of United States Special Operations Command (USSOCOM)?

For the purposes of this paper, doctrine consists of methods of accomplishing military tasks that are broadly accepted, not necessarily written, but used and believed by the majority of qualified people in a specific field.

The first doctrinal considerations are focused on the established mission areas that are the responsibility of the United States Special Operations Command, followed by an evaluation of how the CV–22 may fit into each of those missions, and the unique capabilities that the Osprey has in each one. Those mission areas are Direct Action, Unconventional Warfare, Counterterrorism, Foreign Internal Defense, Strategic Reconnaissance, and include a number of collateral mission such as Personnel Recovery and Security Assistance that Special Operations Forces are suited to perform. The next doctrinal focus is on missions in which the Osprey may prove valuable, but are not necessarily the responsibility of Special Operations Forces, either because they belong to some other force, or they have never been performed due to technological shortfalls. Specific examples include constabulary activities, humanitarian operations, counternarcotics, and Special Operations unique fire support.

The recommendations made in the paper are based on taking full advantage of the unique capabilities of the Osprey, particularly the ability to perform vertical landings and takeoffs at ranges far greater than existing helicopters. This will eliminate much of the requirements for additional basing near a target, and reduce the infrastructure needed to execute Special Operations today. It will also require the flexibility in planning to allow the Osprey to operate independent of other types of aircraft to fully exploit its capabilities. More important than the recommendations here, is the need for Special Operations leaders and planners to think about how best to use this technological development, rather than simply forcing the Osprey into current C–130 or helicopter roles.

Chapter 1

How To Impact Doctrine

Doctrine is what experience has shown usually works best.

—Maj Gen I. B. Holley, USAFR

Tiltrotor technology is nothing new. The idea for an aircraft that could fly with the speed of a propeller driven plane, then land vertically like a helicopter, was designed, tested and flown in the 1950s.[1] The idea was abandoned, however, as being impractical due to the complexity of the machine, poor flight characteristics, and excessive costs. Nonetheless, the potential use for such an aircraft is obvious and still exists. Helicopters have become a staple in most modern militaries for use in those situations where no runways exist and aircraft must be landed in remote areas. However, the helicopter has always had to trade off speed, range, and cargo carrying capability, in order to hover and land vertically.

The V–22 "Osprey" program is the most recent attempt to use tiltrotor technology to fill gaps between helicopters and fixed–wing aircraft. The primary US military purpose the V–22 will be to replace the Marine Corps' aging fleet of H–46 amphibious assault helicopters.[2] This new aircraft, designated the MV–22, is scheduled to come into the active force in 2000 with the first operational units in 2002.[3] The V–22 has also been designed and funded for long–range special operations: the CV–22 will be a specially

modified version of the Marine aircraft (see appendix B), and will include the unique avionics and armament needed for Special Operations Forces (SOF) mission areas.[4] The Air Force is scheduled to take delivery of the first CV–22 in 2002 with the first operational capability in 2005. The development of special operations doctrine for the C V–22 will be the focus of this paper, though Marine Corps efforts to develop doctrine for their version of the V–22 will also be related.

Figure 2.

Figure 2. The CV–22

The CV–22 will be the cornerstone of SOF aviation in the next century. It will replace all the Air Force's special operations helicopters, HC–130 tankers, and some MC–130 Combat Talons. The US Army special operations aviation element, part of the United States Army Special Operations Command, will buy the MH–47E and MH–60K SOF modified helicopters to replace their current H–60 and H–47 variants. The addition of terrain following radar and electronic counter measures will make the new Army SOF helicopters more compatible with Air Force Special Operations Command (AFSOC)

helicopters with regard to capabilities in higher threat areas or in marginal weather.[5] In all, The United States Special Operation Command (USSOCOM) will eliminate 89 aircraft from the Air Force component in order to fund the development and production of the CV–22. By 2010, when the CV–22 is scheduled for full operational capability, the CV–22, MC–130E, MH–47E, and MH–60K will be USSOCOM's long range infiltration and exfiltration platforms.[6] AFSOC is also looking at a replacement for its MC–130 to complement the V–22 in the years beyond 2010 with a project called the MC–X.[7] The primary mission for CV–22 will be long range insertion, extraction, and resupply of Army, Navy, and Air Force SOF.[8].

Historically, there is a tendency to use new weapons systems in a role that others had previously performed, even if the capabilities are not identical. This does not always take advantage of what may be a new system's unique capabilities. Often it is organizational inertia that prevents the proper assimilation of a new weapon system, because it just does not fit into the organizational structure. The first appearances on the battlefield of the machine gun and the tank come to mind.[9] These systems were introduced with little or no understanding of how they might change the nature of warfare. It is relatively easy to substitute a new technology for another. The support structure and manning are already there and do not need to be created. The personnel exist and do not need to be retrained in the purpose of the new system, only in its operation. Often, especially in these times of decreased budgets, it is necessary to trade off an old system to afford the new one. This is the case for the CV–22. AFSOC is being forced to give up its SOF helicopters in order to afford the CV–22.[10] It can only be assumed that leaders at USSOCOM and AFSOC

believe this trade off provides more benefit from obtaining the CV–22 than it gives up from losing the 89 aircraft mentioned previously.

It is important that development of SOF doctrine is advanced to ensure that the benefits of the CV–22 compensate for the capabilities USSOCOM plans to eliminate. There should be a mechanism in the SOF command structure to ensure that doctrinal issues such as these are addressed. Only then, will the benefit of next generation technologies be fully exploited. This mechanism should stimulate innovation and encourage new ideas in order to explore new possible mission areas and new methods for doing the old ones. Creativity, flexibility, and initiative have long been considered strengths of the special operator.[11] This issue provides the perfect opportunity to demonstrate those attributes again.

The purpose of this paper is to examine some of the doctrinal issues that arise from the addition of the CV–22 to the SOF arsenal; to look at some historical data on cases where similar evaluations were called for and consider their results; and to consider what measures are being discussed or proposed currently. The paper will focus on the following question:

> *What changes in Special Operations doctrine should be made in the future, due to the addition of Tilt–Rotor technology(in the form of the CY–22 Osprey), to maximize and enhance the capabilities of United States Special Operations Command (USSOCOM)?*

In order to evaluate or modify doctrine, it is necessary to first define it. This is a difficult task as it is easy to confuse tactics, procedures, and strategies with doctrine. The

current Air Force definition states that doctrine is "what we hold true about aerospace power and the best way to do the job in the Air Force."[12] The choice of the word "way" can easily cause misinterpretations and lead to the confusion mentioned above. The Webster's II dictionary says doctrine is a "principle or body of principles presented by a specific field, system, or organization for acceptance or belief." Principles, as used here, may be the accepted principles of war or may also be more focused, and particular to one part of the military profession, special operations for example. US joint publications discusses principles as well when defining doctrine; it says "doctrine is a statement of the fundamental principles that guide the employment of military forces or elements[13]

For the purposes of this paper, doctrine consists of the "ways" that are broadly accepted, not necessarily written, but used and believed by the majority of qualified people in a specific field.

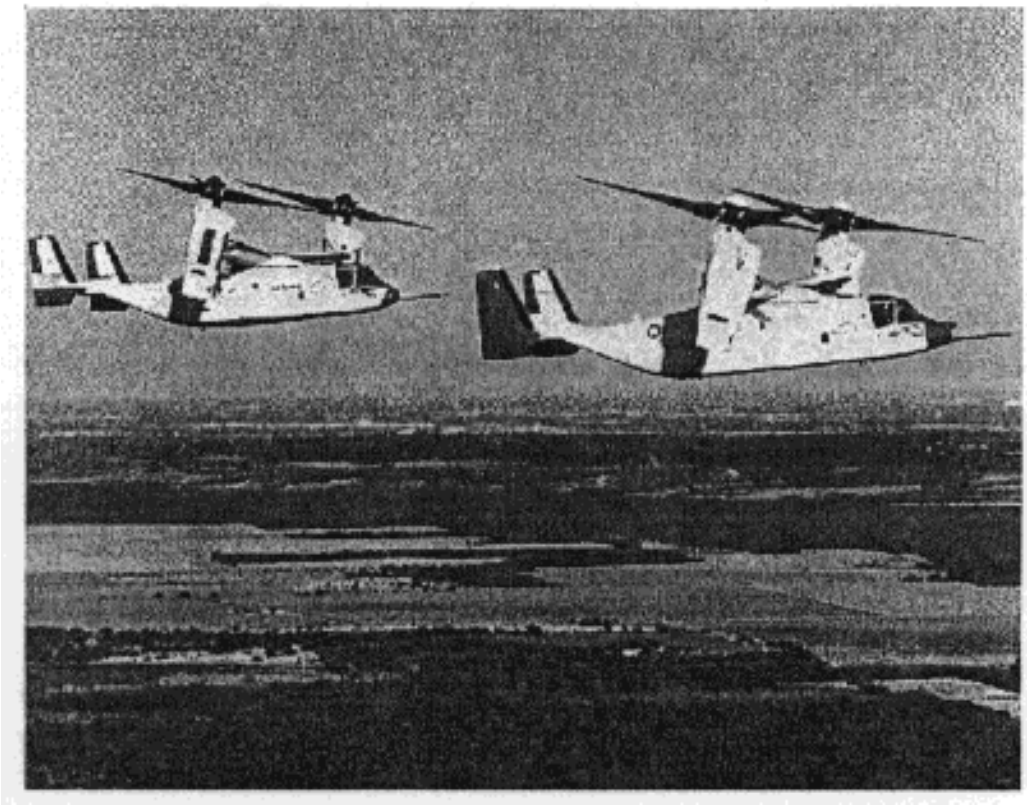

Figure 3 Two MV–22s in Formation

By contrast then, tactics are the more specific ways to do parts of the overall job. There are often several tactics available to do each particular job. The difference between tactics and doctrine is sometimes hard to see, and indeed may be the same thing in some situations. If a particular tactic becomes very widely accepted as the best way to accomplish some part of a mission, it may be considered doctrine. Strategies consist of the particular methods that are selected to accomplish particular objectives given a certain situation, and the order in which those methods are executed.

The other question that begs attention here is whether technology should dictate doctrine or the other way around. In fact, it can and should happen in both directions. As doctrine is developed and evolves with experience, efforts should be made to create the

best possible equipment to execute that doctrine. On the other hand, it would be foolish to ignore the technological advance made in the name of science because there no call for them in the current doctrine.

> During the Twentieth century, . . . none of the most important devices that have transformed war – from the airplane through the tank, the jet engine, radar, the helicopter, the atom bomb, and so on all the way down to the electronic computer – owed its origins to a doctrinal requirement laid down by people in uniform.[14]

Advances in technology may offer new and superior modes of operation that should be incorporated in doctrine.

Ideally, the doctrine is created with the purpose of providing a framework for the best methods of performing military missions, after which, the equipment needed to operate within that doctrine would be designed and procured. However, in reality, the development of technology cannot be that responsive. It is necessary to work within the constraints of what the scientists and engineers can produce. At the same time, technological developments are often made that do not relate to any doctrinal requirement, yet if the doctrine is flexible, may allow for some expansion in capability. Maj Gen William F. Garrison, commander of the JFK Special Warfare Center and School says that the "historically derived portions of doctrine are combined with actual and anticipated technological advances and our best guess of what future requirements and operational environments will be."[1515] The military must be ready to do both at the same time; provide inputs to the scientific community as to future technological requirements and be prepared to adjust the way business is done when new technologies spontaneously appear. Many would argue that the V–22 is a technology that is being introduced to the military for

other than military reasons, but that does not eliminate the requirement for the most flexible doctrine in order to use it most effectively. [16]

A SOF example scenario may help to further explain strategy, doctrine, tactics, and procedures. Suppose a terrorist training camp has been identified and the national command authority (NCA) has decided to destroy the camp and to capture some of the terrorists in an attempt to find out who is funding them. It will involve a small assault team using helicopters to drop in on top of the camp at night. The national "strategy" is the NCA decision to repress terrorism in general. The operational "strategy" is to implement this in the current case by repressing these terrorists and the order in which the elements of doctrine are selected and executed.

The tactical "doctrine" involved in the aviation portion of our scenario is that a staging base will be used consisting of an airfield that has been secured by a battalion of Army Rangers, after which the helicopters will operate in two ship elements for mutual support, and the crews will use night vision goggles to allow them the advantage of night operations. The use of Rangers to secure an airfield is widely accepted as one of the best ways to use them. SOF helicopters will almost always operate in minimum formation of two aircraft in order to provide mutual support, and will operate at night whenever possible in order to take advantage of superior night vision. These methods may also be considered tactics, but are so widely accepted and commonly used, that they are, in effect, tactical "doctrine." The other tactics involved, that are not doctrinal, might be the configuration of the helicopters in a hover in order for their door guns to provide a full

range of coverage on the target. This tactic is different in every situation and is therefore not doctrine.

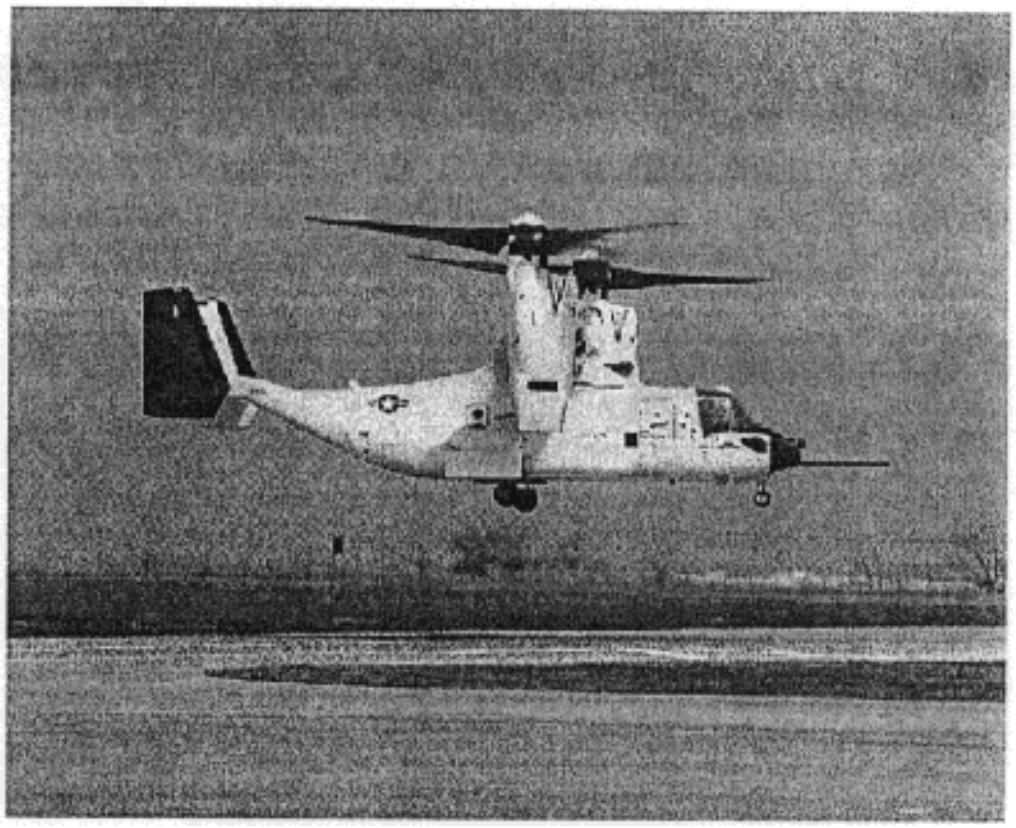

Figure 4. MV–22 in hover configuration.

It is evident that the line between doctrine and tactics can be blurry, but the key element is that doctrine is a widely accepted method of accomplishing something, rather than a choice between many methods, any of which may work depending on the situation. Doctrine is a combination of history, the lessons history holds, and a prediction of the future, and how circumstances may require changes in the nature of war. It exists at all operational levels from the lowest tactical details to the broadest strategic applications. A broader example of SOF doctrine is that special operations "may frequently be covert or

clandestine."[17] This example is certainly broader in scope, but the key element that makes it doctrine is that it is widely accepted.

There are several sources of written doctrine that apply to SOF. The Joint Chiefs of Staff write doctrine that is intended for situations in which forces from two or more services are participating. Service doctrine should not conflict with joint doctrine. The primary publications that apply to SOF aviation are JCS Pub 3*0, Doctrine for Joint Operations,* and JCS Pub 3–05, *Doctrine for Joint Special Operations.* The latter, with its corresponding series of publications, is the responsibility of USSOCOM. These documents, however, are very broad in scope, designed to give senior commanders, general knowledge of SOF capability who may not have much direct experience with them. They are obviously not a source of the tactical level doctrine mentioned in the scenario above.

Service doctrine is still applicable to SOF and its aviation in particular. In this case, there are some unique situations as Army and Air Force SOF aviation units operate side–by–side on a daily basis, yet are still influenced by their service doctrine. The Air Force's AFM 1–1 is the basic doctrine for the application of airpower. The Army equivalent is FM 100–5. Again, both of these documents are extremely broad in nature and address special operations at the most strategic levels. The subsequent levels of doctrine below this are found in manuals, regulations, standard operating procedures, in–flight guides, and even training guides. There will be actual doctrine hidden in pages of safety procedures and coordinating instructions.

The most abstract source of doctrine lies in the beliefs and experience of the commanders, planners, instructor pilots, and operators at each level of command. It differs

from theory only in that it is widely believed. This is the source of the unwritten doctrine mentioned earlier. It comes from training, exercises, chalk talks, bar stories, combat experience, and then is passed from one to another. This is also where doctrine evolves and changes. Only after new ideas are examined and re–examined, in formal and informal discussion, do they make it on to a written page somewhere. A new idea may concern doctrinal issues at every level of war, but may not be labeled as such, but if it becomes commonly accepted as the best method of doing business, it is doctrine.

Some background on the recent history of the V–22 will also be useful before we further explore the doctrinal issue. The program began in 1972 when the Army and NASA contracted with Bell and Boeing to develop a prototype tiltrotor aircraft. The result was the XV–15 which first flew in 1979. In 1981, the Joint Services Aircraft Program (JVX) was established after mission areas from all the services had been identified for the program. Initially, the Army was the executive service, but the Navy took over in 1983 after the Army elected not to continue its involvement. The Navy named the aircraft 'Osprey' in 1985 after a marine bird of prey that can both swoop and hover.[18]

Six prototype V–22 aircraft were contracted based on the success of the XV15. The V–22 would be very similar, only significantly larger, allowing it to haul passengers and cargo. The first aircraft flew in 1989, and the flight test program continues today. In 1989, however, Secretary of Defense Richard B. Cheney canceled the program as the decline in defense budgets began. He did so based on Defense Department studies showing that a combination of helicopters could perform all the same mission areas for less cost. However, the Marine Corps, Boeing, and a group of interested members of

Congress, formed an "iron triangle" that proved too powerful for Cheney and that kept the program alive.[19] This group provided its own studies that suggested the V–22 could do the variety of missions in a more cost effective manner than the combinations of helicopters being considered. Because of Congressional interest in commercial applications, not to mention the fact that parts for the aircraft are built in every state, Congress reinstated funding for the program. Though delayed from its original schedule,[20] the program is now fully funded and appears to be on firm ground. The decision process to procure the aircraft has been heated and bloody over the past decade. For the purposes of this paper, that decision is considered final. It is time think about the best way to use it.

The next chapter will attempt to look at similar experiences concerning the doctrinal development and system employment of the AV–8 Harrier line of aircraft. The Royal Air Force, the Royal Navy, and US Marine Corps have all operated the aircraft but have done so in significantly different ways. The T–Harrier lessons will illustrate some cases where doctrinal development was proactive, allowing for forward thinking in how to use the aircraft best. They will also show some cases where the Harrier was not used effectively because doctrine became stale and inflexible.

The third chapter will attempt to match the Osprey with the primary mission areas that USSOCOM is tasked to perform currently. These include direct action, unconventional warfare, special reconnaissance, foreign internal defense, counterterrorism, psychological operations, and civil affairs. The CV–22 will have a small role in several of these mission areas, while it will take up the bulk of the responsibility in others. Some historic examples of typical SOF missions will be used to frame the discussion of how the CV–22 might be used.

The fourth chapter attempts to take these mission areas a step further. It examines how the unique capabilities of the Osprey, combined with the changing international political situation, may lead to some completely new roles for SOF.

Finally, the concluding chapter is a compilation of what doctrinal recommendations should be initiated by USSOCOM. These may be written or unwritten, and in some cases, doctrine may be more flexible when it is unwritten.

The key issue is for SOF commanders and planners to think about the Osprey as a new tool with unlimited application, and not just the new infiltration aircraft for SOF.

Notes

[1] Capt Michael L. Crouch, "The V–22: Can the Nation Afford to Forgo its Production?" (Masters Thesis, Naval Postgraduate School, Monterey, CA, 1991): 11.

[2] Glenn W. Goodman, "Air Commando Shuffle," *Armed Forces Journal International,* (January 1996): 44.

[3] "AFSOC backs Marines on V–22 Acceleration," *Aerospace Daily,* (October 24, 1995): 144. The Air Force is supporting a Marine push to accelerate the production and delivery of the V–22 saying that such a move would reduce the long term per unit cost of the aircraft. This acceleration could shorten the acquisition process by two or three years.

[4] Vincent P. Grimes, "The V–22 Osprey: A Rising Phoenix Rising," *Aerospace International,* (June 1993): 72–3.

[5] Scott R. Gourley, "Special Operations Aviation Programs," *National defense,* 77 no. 483 (December 1992): 38–9.

[6] "AFSOC Backs Marines on V–22 Acceleration," *Aerospace Daily,* (October 24, 1995): 144.

[7] Goodman.

[8] *AFSOC CV–22 Command Management Action Plan (CMAP),* (HQ AFSOC/XPQV, Hurlburt Fld FL, 3 November 1995): 1.

[9] Martin Van Creveld, *Technology and War: From 2000 BC to the Present,* (New York, The Free Press, A Division of Macmillan, Inc. 1991): 222–3.

[10] Goodman.

[11] Carl S. Stiner, "US Special Operations Forces: A Strategic Perspective," *Parameters,* (Summer 1992): *5–8.* General Stiner, a former USCINCSOC, discusses the "significant flexibility" that SOF provide to US defense planners and eludes to the fact that this is fundamental characteristic of SOF.

[12] Air Force Manual 1–1, *Basic Aerospace Doctrine of the United States Air Force, Vol 1,* (Washington DC, March 1992), vii.

Notes

[13] United States Joint Staff, *Doctrine for Joint Special Operations,* JCS Pub 3–05 (Washington DC, October 1992): I– I.

[14] Van Creveld, 220.

[15] Maj Gen William F. Garrison, "A USSOCOM View of Doctrine," *Special Warfare*, (July 1995): 17.

[16] John D. Morrocco, "Pentagon to Fund V–22 for Special Ops," *Aviation Week and Space Technology,* 139 no. 14 (October 4, 1993): 58. Much has been written on the fact that the Osprey is as much a political aircraft as it is a military one. The V–22 has been pushed for and saved by Congress repeatedly, because of the numerous districts in which it will be produced and the commercial applications of the aircraft after the military pays for its development. See also Vincent P. Grimes, "The V–22 Osprey: A Phoenix Rising," *Aerospace International,* 17, no. 6 (June 1993): 72.

[17] United States Joint Staff, *Doctrine. 1–4.*

[18] Capt Michael L. Crouch, "The V–22: Can the Nation Afford to Forgo its Production," (Masters Thesis, Naval Postgraduate School, Monterey, CA, 1991): 13.

[19] Stephen T. Johnson, *The V–22 Osprey: Phoenix or albatross?* (Army War College, Carlisle Barracks, PA, 9 April 1992): 16–21. An excellent and concise description of the Congressional battles over the Osprey and specifically the impact of the "iron triangle."

[20] Crouch, 53.

Chapter 2

The Harrier Example

> *The airplane won't amount to a damn until they get a machine that will act like a hummingbird – go straight up, go forward, go backward, come straight down and alight like a hummingbird.*
>
> —Thomas Edison

The purpose of this chapter is to further illustrate the importance of critically analyzing doctrine prior to fielding a new technology. The Harrier jump jet (known as the AV–8 by the US Marines and the GR–3,5 in the United Kingdom) provides an excellent case study because it is a single technological development that was used by three services with different doctrinal concepts. The technological development unique to the Harrier is similar to that of the Osprey in that they both have the ability to takeoff and land from a hover. There is also a substantial historical base on the development and employment of the Harrier from both British and American perspectives.

Military leaders in both Britain and the United States were faced with the same questions about the Harrier in the 1960s that USSOCOM leadership is faced with today regarding the CV–22. As the Harrier was developed, military leaders recognized the military application of an attack aircraft that could live at the front without being tied to an airfield. The questions they faced, whether or not they knew it at the time, involved how the doctrine of their particular services might change to take advantage of the Harrier's

unique abilities. If those questions had gone unasked, the Harrier would have been simply a replacement for some other attack aircraft with no conceptual changes in operations.

The ability to operate from remote, austere, and temporary locations allows for a significant increase in mission flexibility. Both the Osprey and the Harrier have unique capabilities in this regard. One significant difference is that the Harrier takes advantage of this ability primarily at takeoff from its base, whereas the Osprey will primarily take advantage of it at the target. The ability of the Harrier to hover allows it to be based and operated from ships or remote areas, whereas the ability of the Osprey to hover allows it to land and insert or extract forces or equipment from remote sites at or near the target. Regardless, the increase in capability may allow for new and more effective ways to accomplish certain missions, and may allow for the accomplishment of new missions. The similarities between the Harrier and the Osprey are convenient for discussion, but are not critical to the argument. The machine gun or the submarine would probably also make useful case studies as well. The same analysis should be done for any technolgical developments. What is critical, is the link between new technology and increased effectiveness, and more importantly, the impact on applicable doctrine. Historically, doctrine has not always kept pace with the technological progress, though there are also cases where doctrine has been developed before the technological capability to execute it. Doctrine must be flexible in order to take the greatest advantage of new scientific developments.

The introduction of the Harrier represented a significant technological change in the capabilities of fighter aircraft. It is important to examine how effectively the Harrier was incorporated into the modern day arsenal, and how much vision and initiative were

displayed in that integration. The three primary sources of data for this investigation are the Royal Air Force (RAF), the Royal Navy, and the US Marine Corps (USMC), because they are the primary users of the aircraft. The issue for each of these services was to decide how to adapt their doctrine to make the Harrier the most effective and useful platform possible.

The Harrier was created through a combination of military requirement and scientific discovery. Airplane designers have always looked for ways to make their designs independent of airfields. Helicopters were the first attempts of many famous aircraft builders, the Wright brothers included, before they moved on to conventional fixed–wing designs.[1] Hawker Siddeley Aircraft, today called British Aerospace, has long built successful military aircraft, the Hurricane and the Hunter to name two of its best. In the 1950s, Hawker Siddeley proceeded on a project that would eventually evolve into the Harrier. They put much of their own money into it without direction from the military, and hoped to the sell the aircraft after proving its worth.[2] It was an example of industry providing a technological advance without a request or written requirement from any military source.

On the other hand, the engineers certainly understood that a vertical/ short takeoff and landing (V/STOL) capability was a valuable commodity to the military community. The Harrier was developed with military application in mind as its primary function. It was not developed purely through the interest of science, though civilian uses have also been considered throughout the life of the Harrier. As late as 1978, Marshal of the Royal Air Force, Sir Neil Cameron said "that V/STOL will eventually develop for non–warlike uses and ... I shall be very surprised if before the end of the century the hummingbird

technique is not part and parcel of our aviation scene."[3] In short, the impetus behind the Harrier was neither purely science, nor strictly military requirement.

The first Hawker prototype, called the Kestral, made its maiden flight in October 1960. The RAF was immediately interested, along with West Germany and the United States. Though it appeared to have some military utility, only the RAF stayed with the program. The aircraft lacked significant range and payload. These limitations were severe and deterred the other interested militaries. The RAF ordered the first Harriers, designated the GR–1, a more powerful and improved version of the Kestral in 1967, and eventually took delivery of ninety aircraft with the first squadron operational in 1969.[4] At this stage, the Harrier was optimized as a close air support platform.

After the first Harriers flew in 1967, two American Marines were sent to the Farnborough Air Show to see the aircraft in action. They persuaded company executives to let them fly the aircraft themselves over the next several days. They were extremely impressed and returned to the US to brief the Commandant of the Marine Corps, General Leonard Chapman. They strongly recommended the Marine Corps procure the Harrier. With the Commandant convinced, the Marines eventually won a bitter budgetary struggle to buy Harriers, and the first of 110 AV–8As (the USMC designation) was ordered in 1970. The initial buy of Harriers eventually replaced the aging A–4 and F–4 fleets in the Marine air arm. The upgraded AV–8B, 276 of which were purchased, now accompanies the F/A–18 and the AH–1 as the Marine Corps tactical air package.[5]

The Royal Navy became involved in the Harrier program with a feasibility study in 1969, but it was not until 1972 that they let a contract to consider the development of a Naval version of the aircraft. The order was placed in 1975 for 34 Royal Navy Harriers.

The only difference from the RAF version was the addition of a forward looking radar for air defense and the replacement of all magnesium parts for anti–corrosion purposes. A navalised version of the Harrier did not need the additional structural enhancements that normal jet aircraft did in order to operate on an aircraft carrier because it could land vertically. It could land just as delicately on a ship as it could on pavement. The navalised version was first flown in 1978 with the first unit becoming operational in 1980.[6] Later, the Indian, Italian and Spanish Navies bought small numbers of Harriers for their small deck aircraft carriers.

During the 1960s, as the Harrier took shape, RAF doctrine was very similar to USAF tactical doctrine. Specifically, the primary purpose of tactical air was to support the ground scheme of maneuver. It was based on the defense against a Soviet land invasion across the European continent. The British assumed that the Soviets would move rapidly and there would be no chance to stop the advance at the outset. Success would depend on the ability to bend but not break until the power of the United States could be brought to bear. The front would be changing rapidly, and airpower would have to be flexible in order to support the Army effectively. Although the United Kingdom still had concerns with colonial, and formerly colonial, regions around the world, the focus of RAF doctrine was on providing close air support and air interdiction in support of ground forces in Europe.

The Harrier fit this doctrine very well. The RAF planned to use the Harrier from roads and fields within ten or twenty miles of the front. Throughout the later Cold War years, two of the three operational Harrier units were based in Germany. The infrastructure required during combat consisted of only fuel trucks, ammunition, and a

small maintenance capability at the forward loiter area. The advantage of the Harrier was that it could sit on the ground and loiter indefinitely until it was needed, and then start engines and respond in a matter of minutes to the ground forces in trouble. There were trade–offs to for these advantage such as sucurityat dispersed locations and the need for more support equipment and personnel. However, the RAF never attempted to expand the Harrier role because it fit so well into their existing doctrine. The Harrier was only a small part of RAF airpower, but it filled a unique and specialized role in their doctrine.

The RAF partially tested its doctrine during the Falkland Islands war in 1982. It sent sixteen aircraft, the majority on container ships, that operated from forward bases on the islands after the land forces had secured the area. They were dedicated close support for those forces as they moved across the island. Even operating at the end of extremely long supply lines, the Harriers proved very effective in the close air support role. They also proved to be survivable. Port Stanley was defended by Roland and Tigercat radar guided surface to air missiles (SAM) as well as SA–7 and Blowpipe shoulder fired SAMs. SAMs claimed only one victim, a Sea Harrier downed by a Roland. There was also significant anti–aircraft artillery (AAA) which was more effective and scored numerous hits. Repeatedly, RAF Harriers repaired battle damage and returned to the fight. In all, only three RAF Harriers were lost to AAA or ground fire during the conflict.[7]

The USMC doctrine at the end of the Vietnam War was designed to make the Marines the nation's rapid expeditionary response force. The Marine Corps was designed to react quickly anywhere in the world, either as an independent force, or to provide and forced entry, followed by a hand–off to the US Army. Since the Marines had to be light and mobile, they could not use heavy armor and artillery, and depended instead on very

responsive close air support to fill that gap. Much like the British, the Harrier fit well into this mold. It could operate from ship or from austere areas ashore. Its short range was not a critical problem, because it would always be in close proximity to the fighting ground units. The Marine ground forces also required fuel and ammunition so most of the logistic infrastructure needed to support Harriers at the front already existed. The unique requirements of aviation fuel and armament do necessitate some ground personnel dedicated to Harrier operations.

What the Marine Corps did not do was adapt its doctrine to take advantage of the Harrier. The Harrier replaced the A–4 and F–4 in numbers, but there was never a consideration of using only Harriers. Based on the fact that Marine Corps doctrine is based on a synergistic air–ground team that requires all the players to participate, a mix of Harriers and conventional fixed–wing fighters does not take full advantage of the Harrier. The Marines still depended on either big deck carriers to provide air defense and deep strike, or they needed to secure a conventional fixed–wing base, once ashore, to operate its F–18s. It is logical to have both capabilities if one or the other can be used independently depending on the situation. However, Marine Corps doctrine stresses the importance of all those assets being based and operated as a seamless team.

According to Marine Corps doctrine, there should always be either an aircraft carrier or an airfield ashore; if there are always provisions for operating conventional aircraft, there is no advantage to having a V/STOL aircraft. Marine Corps doctrine specifically states that "in order to maximize combat power, we must use all the available resources."[8] On the other hand, the doctrine also says that "the Marine Air–Ground Task Force (MAGTF) may be of any size, and the weighting and composition of its component

elements may vary, depending on the mission and enemy situation."[9] This would imply that the commander is free to tailor his force as needed, yet this is not accomplished in practice. It may occur for a particular tactical mission, but the overall picture painted by the document leads the reader to believe that the parts of the MAGTF are not designed to be separated. This is not to say that the Marines should have relied completely on the Harrier, eliminated the rest of their fixed wing aircraft, and forgone the need to secure conventional runways once ashore. On the contrary, their doctrine should be changed to allow flexibility to operate either way; either with F–18s operating from secured airfields ashore or with Harriers operating from austere locations near the front.

The Royal Navy doctrine in the 1970s acknowledged the importance of force projection in the Cold War, and the value that American super carriers had in this role. However, cost was prohibitive. The Royal Navy recognized potential for the Harrier that no one else had. It could be operated from the Navy's existing helicopter carriers, and even the Kestral had been tested in deck landing operations off the HMS *Ark Royal* in 1963.[10] The vision on their part was in seeing the Harrier performing other than its intended roles. That vision resulted in a helicopter carrier with Harriers that could provide, on a smaller scale, the same force projection capability as an American super carrier.

The Sea Harrier was converted by the Royal Navy into a multipurpose strike aircraft that could perform air defense of the fleet with the addition of a search radar and AIM–9 sidewinder missiles. They also conceived of the idea of adding the "ski–jump" to the front of their small carriers that allowed more fuel or ordnance to be carried, yet still allowed for vertical landing after burning fuel or expending ordnance. The Sea Harrier could

perform air defense, anti–shipping, air interdiction, close air support, and reconnaissance functions, and would execute all these missions in the Falkland Island War in 1982.[11] The Royal Navy eventually deployed twenty–eight Sea Harriers for operations in the conflict, its air–to–air missiles being delivered only as the two Royal Navy carriers left for the fight. The crews trained themselves during the transit, and later shot down twenty–three Argentine aircraft, to include two Mirage, nine Israeli built Daggers, and seven US built A–4 Skyhawks, with no air–to–air losses.[12] In several engagements, the Argentines fired the first missiles, before being shot down themselves, and on three different occasions, a flight of two Sea Harriers attacked larger formations and came away with multiple kills.[13] Only two of the Sea Harriers that participated were lost to hostile fire, one to a Roland radar guided SAM, and one to automatic weapons fire. It is true that much of success enjoyed by the British Harrier pilots was due to the superior missile they had in the AIM–9, and may have been erased against Israel or the Soviet Union. However, the realization that the weapons made the difference, and the decision to put them on an aircraft designed for close air support in Europe, are what made their doctrine successful.

In defense of the Argentine Air Force and Navy, they were working at the end of their range and were targeting British ships, not Harriers. They also had significant success, sinking four British warships, one landing ship, and a container ship that was providing supplies for the land forces ashore and basing for Harriers. They also damaged eleven other British ships, for a total of 17 ships hit out of the 100 that made up the British task force, though at least one of those damaged was hit by a land based Exocet missile.[14] Some technical problems, on the part of Argentine weaponry, prevented even more damage, which potentially, could have forced the United Kingdom to back out of the

fight. The Argentine Air Force actually flew 82 jet aircraft in combat from mainland bases, plus 40 turboprop Pucaras off the island, and the Argentine Navy added thirteen more Skyhawks and Super Etendards.[15] On two separate days, they managed to mass up to 56 combat sorties in an attempt to overwhelm the Sea Harrier defensive combat air patrols. In all the British had 28 Sea Harriers, and 14 RAF GR–3s. The fact remains that the Harrier was significantly outnumbered, yet performed well above most expectations.[16] Without them, the British would have had little hope of forcing the Argentines from the islands. The development of ships designed to operate fixed–wing V/STOL aircraft has since given many nations the ability to project airpower, and has been called a "major revolution in maritime airpower."[17]

The lessons to be learned have to do with how to adapt doctrine to best use a technological improvement such as the Harrier. The limitations of the new weapon system must also be considered. For the Harrier, the limitations were range and payload, both of which were significantly less that conventional fighters. The Royal Navy provided the best example of how to recognize capabilities that were not designed into a system, then adjust their doctrine to get the most return on their investment, at the same time, weighing the limitations that are incurred. This massive adjustment allowed the Royal Navy to project force in the Falklands campaign in a manner impossible only a decade before. The Harrier is certainly not a premier air superiority platform against first rate air forces, but the fact remains that without the vision and foresight of the Royal Navy that led to the development of the Sea Harrier, the threat to the British surface fleet during the Falklands War would have been far greater and may have prevented them from projecting military force in the Falklands.

Notes

[1] Thomas Walsh, *One Day at Kitty Hawk* (New York: Thomas Y. Cromwell Company, 1975), 19. As teenagers, the Wright brothers began aircraft building in an attempt to build larger versions of a small model helicopter purchased by their father. The power requirements for the increase in size was never predicted by the brothers and they gave way to conventional airplane designs.

[2] Greg Ferguson, "Harrier: The Airpower Revolution Continues," *Marine Corps Gazette* 75, no. 5 (May 1991): 86.

[3] Bruce Myles, *Jump Jet: The Revolutionary V/STOL Fighter* (London, England, Presidio Press, 1978), viii.

[4] Joel L. Goza, "The AV–8B Decision" (Masters Thesis, Naval Postgraduate School, Monterey CA, June 1982), 11.

[5] John W. Fozard, "The Origin of a U.S. Species: Entry of the AV–8A Harrier into the Marine Corps," *Marine Corps Gazette* 76, no.5 (May 1992): 77–85. This article has an in depth discussion on the Marine Corps story and the efforts made to buy the Harrier during the Vietnam War, when opposition was stiff. The Navy was afraid that the Marines were trying to take some of its mission. Congress was concerned about buying aircraft from a company outside the US. Eventually McDonald Douglas became involved as the US licensee for Harrier, though the aircraft continued to be built in the United Kingdom.

[6] Roy Braybrook, *British Aerospace Harrier and the Sea Harrier* (London, Osprey Publishing Limited, 1984), 92–101. This book offers the best look at the development of the Sea Harrier, and details the accounts of each Harrier air–to–air engagement during the Falklands War.

[7] John Dibbs and Tony Holmes, *Harrier: The V/STOL Warrior* (London, Osprey Publishing Limited, 1992), 50–51.

[8] *Warfighting, U.S. Marine Corps FMFM 1* (Washington D.C., Department of the Navy, 1989), 75.

[9] *The Role of the Marine Corps in National Defense, U.S. Marine Corps FMFM 1–2* (Washington D.C., Department of the Navy, 1991), 4–8.

[10] Dibbs. 97.

[11] John Godden, *Harrier: Ski–jump to Victory* (Oxford, Brassey's Defense Publishers, 1983), 86. This book tells all the stories of the Harrier operations in this conflict as told by the commanders and crew members involved.

[12] Braybrook, 197.

[13] Jeffrey Ethel and Alfred Price, *Air War South Atlantic* (New York: Macmillan Publishing Company, 1986): 214, 234–242. These authors conducted numerous interviews with all the Royal Air Force and Royal Navy units that participated in the war as well as most of the Argentine Air Force and Naval Air units. They addresses inconsistencies that arose after the war in the total number of Argentine aircraft destroyed, but confirm the accepted number of air–to–air kills for the Harrier. The area of contention lies in the surface–to–air gun and missile claims. The author confirmed with the Argentine Air Force a total of 19 aircraft destroyed during 23 AIM–9L engagements, and four others destroyed in the air by the Harriers 30mm cannon.

Notes

[14] Max Hastings and Simon Jenkins, *The Battle for the Falklands,* (New York: W.W. Norton & Company, 1983): 346–350.

[15] Braybrook, 175.

[16] Ferguson, 91, Hastings and Jenkins, 214.

[17] Ferguson 94,

Chapter 3

SOF Traditional Mission Areas

> *The challenge is to develop the means for SOF assets to penetrate hostile or denied airspace without being detected; if detected, then to avoid threat engagement; if threat avoidance is impossible, then to penetrate the threat at the softest point.*
>
> —James R. Locher III, ASD/SOLIC

The term "special operation" has always implied some mission or task that did not fit into any conventional vein of warfighting, and was left to those "snake eaters" who could not conform to military tradition. At the same time, it was the versatility and creativity of SOF that was their greatest asset. Nonconformity has never been considered a positive trait in military circles, yet special operators have survived as outcasts because they performed those dirty and difficult, though necessary, jobs that no one else wants. Air Force Special Operations Command (AFSOC), characterized as a "small, highly specialized .... and forever–out–of–the–mainstream air force" of United States Special Operations Command (USSOCOM), will continue to operate with that reputation.[1]

Since 1986, there have been significant efforts to change the SOF image. After the creation of USSOCOM, the Chairman of the Joint Chiefs, Admiral William J. Crowe Jr., prescribed the following steps for breaking down the barriers between SOF and conventional forces:

> First, break down the wall that has more or less come between special operations forces and the other parts of our military . . . Second, educate the rest of the military – spread a recognition and understanding of what SOF does . . . and how important that it is done . . . Last, integrate SOF efforts into the full spectrum of our military capabilities.[2]

Much progress has been made in this regard since, and the importance of SOF, particularly of integrating them with conventional forces, has been recognized in recent years. The vital role they play, as a strategic weapon in their own right, or as a force enhancer in a major regional war, is now widely understood.[3] With the emphasis on joint operations in recent years, SOF has also been an example to the services of how smoothly and effectively joint operations can be conducted.[4]

Joint doctrine states that "SOF are unique because they provide the National Command Authorities (NCA) a broad range of capabilities that can be of great utility across the entire operational continuum."[5] However the full range of SOF activities has been defined under the five basic mission areas of USSOCOM. They are Direct Action, Unconventional Warfare, Special Reconnaissance, Counterterrorism, and Foreign Internal Defense. USSOCOM also has primary responsibility for Psychological Operations (PSYOP) and Civil Affairs (CA); however, these missions are unique and have dedicated forces that specialize in them, and therefore do not fall under the general category of special operations. USSOCOM operators have been traditionally involved in other missions that, because of their unique training and equipment, they are particularly suited to perform. These collateral activities include security assistance, humanitarian assistance, and personnel recovery, among others. All of these mission areas are assigned to USSOCOM by *Title 10, United States Code,* Section 167.

The role that the CV–22 will perform in each of these will be different, with an emphasis placed on some of them more than others. It is important to consider how the Osprey might be used in each of the missions, and more importantly, the doctrinal changes that should be considered before the Osprey is operational. The potential doctrinal shifts apply to all the components of USSOCOM, not just the air component. In order to make a complete analysis of a completely new capability such as the CV–22, the entire SOF community must be involved. The same is true of any non–aviation related technology advance as well.

Direct Action (DA) missions for SOF are strikes of short duration, by a relatively small force, designed to "seize, destroy, capture, recover, or inflict damage on designated personnel or material."[6] They may involve raids, ambushes, or direct assaults. DA missions are very similar to those conducted by many other conventional forces; however, what makes DA unique for SOF is the fact that the particular mission is often conducted in a covert or clandestine manner. The mission may also have strategic or operational implications, and is often controlled directly by the National Command Authority (NCA). This is especially true for missions conducted in peace time, or in a region where no conventional forces are operating.

The doctrinal role for SOF aviation assets has been historically twofold. First, is the direct application of force from the air in support of some strategic or operational objective, or in support of conventional forces. These particular objectives are normally either politically sensitive, or require the unconventional capabilities of SOF. Fixed wing gunships, such as the AC–47 and AC–130, have performed in this manner, as well as SOF transport aircraft dropping outsized armament, such as the MC–130 dropping the BLU–

82 15,000 pound bomb on Iraqi troop concentrations during the Persian Gulf War[7]. SOF Helicopters have been tasked independently against designated DA targets, and to provide fire support for SOF on the ground. The second role is the transportation of SOF to and from their DA target areas. This has involved fixed wing aircraft using parachute delivery or airland methods, and helicopters using fast rope, rappel, hoist, or airland techniques.

An example of direct application of force involves the use of an AC–130 gunship in position over the Pacora river bridge during the initial hours of operation JUST CAUSE. The objective was to prevent Panamanian Defense Forces from providing reinforcements to the Torrijos and Tocumen International Airport which was under siege by US Rangers and Airborne troops.[8] A single bridge formed a choke point for any forces attempting reach the airport. A Special Forces (SF)[9] unit placed on the ground coordinated the operation from the safe side of the bridge, and the AC–130 systematically destroyed each vehicle that attempted to cross. The bridge could have been easily destroyed by conventional forces; however, the political sensitivities involved with the entire invasion meant such infrastructure had to be spared to the maximum extent possible.

An example of the transportation of SOF is the raid on the Son Tay prisoner of war compound in North Vietnam in 1970. This operation was an integrated operation involving Special Forces, special operations and rescue H–53 and H–3 helicopters, A–1 Skyraiders, and MC/HC–130s.[10] The primary assault force was a group of 59 Special Forces troops who raided the camp only to find that the prisoners had been moved. The operation involved using a large formation of helicopters and fixed wing aircraft flying at very low levels to avoid radar at night. This was before the advent of night vision devices and was a concept that had never been tried before. It also involved the rather unusual

tactic of deliberately crash landing an H–3 helicopter directly inside the walled compound as a method of rapidly inserting the assault team. Many of the methods used during that raid have since become accepted principles for executing similar operations; thankfully, intentional crashes are not included.

Unconventional Warfare (UW) is primarily the responsibility of the Army SF, though some Navy and Air Force SOF are also trained to perform this mission, and includes such activities as "guerrilla warfare, subversion, sabotage, intelligence activities, evasion and escape, and other activities of a low visibility, covert or clandestine nature."[11] UW missions generally involve very small elements who will spend long periods deployed with indigenous forces of an insurgent or resistance organization. Their operations are usually conducted by those forces with training and equipment provided by SOF. In UW, language skills and cultural orientation are critical, and for this reason, most SOF that train for UW remain regionally focused and assigned.

UW missions were common during the Vietnam War. A notable example was the "Blackjack Operations" which began in 1965, and was a specific campaign designed to attack deep inside Viet Cong safe havens.[12] The teams were small and made up mostly of Montagnard tribesmen with SF leadership. The teams would spend weeks deep inside Viet Cong held areas, living off the land, and off the Viet Cong themselves. They destroyed supply and ammunition caches, attacked leadership targets, and attempted to disrupt all Viet Cong activities in areas they controlled.

Foreign Internal Defense (FID) is similar to UW in scope and activity but is focused on a different target. They both require much of same cultural regional sensitivities. The difference is that FID is designed to support the government of target nation *against* an

insurgent or resistance organization. "FID is an umbrella concept that covers a broad range of activities, always with the primary intent of helping the legitimate host government address internal threats and their underlying causes."[13] It is even more of a training function than UW, and normally, US SOF will not actively engage in combat operations. The focus of FID training, by definition, is on quelling threats from inside the target nation's borders, such as subversion, lawlessness, and insurgency, but many of the skills are equally applicable to basic national defense as well. Often, since the skills needed are not necessarily SOF related, FID missions will use a combination of SOF, who have the cultural expertise and language skills, and conventional forces who may have the required technical expertise. FID missions are currently ongoing around the world in such nations as Eritrea, El Salvador, Bolivia, Chile, and Peru, among others.[14]

Special reconnaissance (SR) involves a wide range of information gathering activities that focus on strategic or operational objectives designed to give the NCA or the theater commander time sensitive information with human insight. Army SF and Navy SEALs train for this mission area, although almost all SOF are capable of it in some form. The unique feature of SR is the theater level focus of the objectives. SR is designed to give a Joint Force Commander (JFC) or the President the information he needs, and is not available from conventional reconnaissance assets. SR teams are normally very small, possibly as small as two men, and may be used hundreds of miles from the nearest friendly forces, or even in a theater with no other friendly forces. Normally, SR teams are inserted using the variety of SOF aircraft and insertion techniques, but may be put in place using anything from small boats to motorcycles. SOF aircraft sensors are another source of SR due to their ability to penetrate deep inside denied territory.

During the Persian Gulf War, SF and Navy SEALs were used extensively shortly before the ground offensive to monitor Republican Guard units and lines of communication between Baghdad and Kuwait.[15] Team sizes were generally six to eight men and most were inserted using SOF helicopters. Several teams were compromised and had to be recovered within hours of being inserted. The teams that remained provided valuable information to the headquarters at Riyadh by monitoring any potential movement of the Republican Guards to reinforce Kuwait or attempt to escape.

The last of the principle SOF missions, which is the most politically sensitive and time critical, is **Counterterrorism (CT)**. Designated SOF units specialize in CT, and stand ready to respond on short notice for tasking from the NCA. Some limited CT capable units are also maintained overseas that concentrate on their particular theater. CT forces are the best equipped and trained forces in USSOCOM. They also train regularly with other SOF units and with conventional forces as well to ensure interoperability. The Rangers and the aviation elements are regularly involved as supporting elements in this mission area, the Rangers to provide security for the target or an airfield, and the aviation for transportation and fire support.

The classic example of this mission is the Iranian rescue attempt in 1980, to recover American citizens being held hostage in Tehran. Of course, the results of that failed mission are well known. Eight Airmen and Marines died on the desert deep in Iran during a refueling accident that occurred after the mission had been aborted because of mechanical failure of three helicopters. The mistakes made on that mission were many, and whether it could have been successful if the team had reached the embassy is a question that will remain unanswered.[16] Even so, many of the same concepts would be

used for a similar mission today. The biggest difference is that the aviation elements have since been trained and equipped for that purpose, as opposed to the ad hoc nature of the air component in 1980. The Rangers provided security at the refueling site and would have secured the airfield at Manzariyeh to facilitate heavy aircraft to carry the hostages and the assault team out of Iran. It is likely the Rangers would perform similar missions in that circumstance today.

There are other elements of the CT mission that have become more prevalent; namely, the proliferation of nuclear weapons, nuclear terrorism, and narco–terrorism. Some of the details for these missions are unique and require some specialized knowledge and training. However, the concepts for these operations and the doctrinal principles applied are still very similar to the Iranian rescue mission. The basic CT scenario involves a very well trained, but relatively small force of "door kickers," an elaborate transportation capability to move that force to a precise location in denied territory, and an equally elaborate communication capability to allow the NCA to control, or at least monitor, the operation from Washington.

Combat search and Rescue (CSAR), or personnel recovery as the mission is termed at USSOCOM, has become a very popular collateral mission for SOF in recent years. Since the Persian Gulf War, USSOCOM has performed extended CSAR deployments in Saudi Arabia/Kuwait, Turkey, and in Italy.[17] The unique capabilities of SOF aircraft make them the most capable forces in the military for this mission, especially with the lack of interest and funding for regular CSAR forces. When a joint commander is given a real world tasking, he will request the best capable force to perform his missions, and will usually

receive what he asks for. Therefore, until rescue forces have equipment on a par with SOF, USSOCOM can expect continue this mission in the foreseeable future.

Other collateral missions that USSOCOM personnel will continue to perform are security assistance and humanitarian assistance. Recent examples of these missions were SOF operations in Rwanda and Somalia. Their special skills and equipment provide a valuable and flexible resource to theater commanders in operations such as these. The language and cultural training of certain SOF units make them extremely useful in the early moments of a crisis. SOF have a very mobile yet extensive communications capability that allow them to establish vital communications with the NCA from their arrival. SOF travel relatively light, and can respond to most situations within hours, rather than days or weeks. Often, the political requirement to do something quickly is the what makes SOF the best choice.

Non–combatant Evacuation Operations are an example of another SOF collateral mission that was recently performed in Monrovia, Liberia, following the recent violent surge in the long civil war there. In this case, US SOF helicopters were flown on C–5 transports from Europe and the US to nearby Sierra Leone. From there, the helicopters inserted a SOF security force into the American Embassy in Monrovia, and over the following nights, evacuated 2000 people to Sierra Leone, 400 of which were Americans.[18]

The CV–22 must be capable of supporting all of these missions according to the AFSOC command management action plan.[19] This command document goes on to discuss the special tasks that the CV–22 will be able to perform such as:

> penetrating politically or militarily denied areas in adverse weather. . . low visibility, clandestine penetration of medium to high threat environments employing robust self–defensive avionics and secure, anti jam, redundant

> communications compatible with current and planned systems use by command and control agencies and ground forces . . . self deploy worldwide without aerial refueling to maximize mission security.[20]

This list of tasks can already be found somewhere in the descriptions of existing SOF aircraft. The natural tendency for planners will be simply to consider how a C–130 or SOF helicopter does the mission and then attempt to fit the CV–22 into the same mold. It is important that the planners and leaders think about the CV–22 as a completely different type of aircraft. They need to make sure they are asking the questions that concern the capabilities of the Osprey that no existing SOF aircraft has.

The answer to those basic questions are relatively simple. Much like the initial Harrier concept discussed in chapter two, the ability to fly like a turbo–prop fixed wing aircraft, but land or takeoff vertically like a helicopter, is the only real difference in the CV–22. That is a very significant difference, but it also important to consider the limitations imposed by that capability. It will carry only a fraction of the cargo load of a C–130 or heavy lift helicopter. The planned load is based on carrying an eighteen man team combat equipped for lesser ranges, or a twelve man team with an internal auxiliary fuel tank on long range missions.[21] This is significantly less than the MH–53 of MH–47 currently in the SOF inventory. The CV–22 will also not carry the heavy duty combat vehicles currently in service with SOF. However, USSOCOM is also developing a combat SOF vehicle to fit in the cargo box of the CV–22, designed to support 4–6 SOF team members.[22]

What, then, is wrong with the helicopters in their current SOF role? The major difference between helicopters and the Osprey is speed. The CV–22 is roughly twice as fast as a helicopter in cruise mode. This speed differential is the single most discussed

advantage of the CV–22. The reason that this is true has to do with the SOF doctrinal need to operate at night. Twice the speed translates in to twice as far into denied territory in one period of darkness, or twice as many missions in that same period. AFSOC believes that this is the most important capability of the CV–22 because there exists a shortfall in USSOCOM capability to penetrate as far as some missions require, land vertically, and exit denied territory on the same night.[23] The AFSOC leadership does not believe there is a shortage of lift capability in most mission scenarios, on the contrary, there is usually an excess, and therefore the lift limitations of the CV–22 will seldom be a hindrance.[24]

The range issue is prevalent in most of the SOF mission areas discussed previously. In particular, Special Reconnaissance is an area in which range can be critical due to the strategic nature of SR. Targets for this mission are often far in the enemy rear areas, in marshaling areas, along lines of communication, or near the target capital itself. In some circumstances, only the Osprey will be able to reach these areas in one period of darkness, and still insert a team precisely in position. The target may also be related to the production of weapons of mass destruction, chemical plants, nuclear storage areas, or narcotics production and transportation. In these cases, the target will often be located deep inside the target

nation, and may or may not have usable bases nearby.

The addition of the Osprey to the SR campaign will affect command and control in this mission. SR teams will be able to operate in greater numbers and deeper than in the past. Current Air Force doctrine simply deconflicts the deep air battle with SOF by declaring Joint Special Operations Areas (JSOA) and then keeps strike aircraft away from

them unless they are working in conjunction with those SOF.[25] The CV–22 will be able to move several teams nightly within the deep battle area due to its speed. A normal helicopter insertion mission will normally involve placing only one team, then returning on the same night. The Osprey will allow Joint Force Commanders much greater flexibility in how they chose to use SOF in the deep battle, causing JSOAs to become extremely fluid.

The speed of the Osprey will also greatly shorten the response time for extracting a compromised team. As discussed earlier, several teams were compromised during the Persian Gulf War within hours of being inserted, and in some cases, had to fight off hundreds of Iraqi soldiers until they could be extracted. Some required dozens of close air support sorties to defend them while waiting for an extraction helicopter. Those were sorties that, in the next war, may be required elsewhere. Pulling teams out of harm's way more quickly may allow higher risk SR missions, enhancing the quality of the information they provide.

The same arguments can be applied to Direct Action and Counterterrorism missions as well, though with a few more limitations. The lift capability of an SR team will generally fit nicely in one or two CV–22s. DA or CT scenarios, on the other hand, require significantly larger forces to be delivered. In some situations, simply adding more Ospreys to the mission will make up the difference. The limitation to that answer is that the physical requirement to put that many aircraft simultaneously into a small target area, as is often the case in DA or CT, and will not be achievable with the V–22.

It is worth considering what other changes in the basic DA/CT concept might be made as a result of the CV–22. For example, it is very common, as mentioned earlier, to plan on securing an airfield near the target area to allow heavy fixed wing aircraft in and

out. Often, this is required to allow the assault team and any hostages, prisoners, or other precious cargo to be extracted on the same night as the assault. However if the CV–22 can go all the way to the target *and* extract the assault team with a precious cargo, then the necessity of the airfield seizure part of the operation may not exist. The savings in manpower and risk reduction of these types of operations may be significantly reduced by eliminating the need for an airfield inside denied territory.

The AFSOC position is that the Osprey will be able to support all the principle SOF missions to include Unconventional Warfare and Foreign Internal Defense. Although historically, these missions have not been performed at extreme ranges of support aircraft. UW may, on occasion, require the long range ability of a CV–22 to place the team initially. Those cases will be infrequent however. Most often UW missions are not transportation dependent, and the teams normally live and operate off the same sources of supply as the organizations they are assisting, and therefore resupply is not critical. In general, the Osprey will not play a significant role in UW.

The CV–22 will also not play a role in FID unless any of the target nations involved operate them independently. This is highly unlikely, as the cost will be prohibitive in most cases. Few nations will be able to afford Ospreys, and those that do will not likely be candidates for US FID missions. The focus of a FID mission is to assist another government and its military on how to use its equipment, not ours. If some nation did operate a V–22 variant at some point in the future, its value would be extensive in a counterinsurgency role because of its dash speed and the capability to precisely drop forces on top of an insurgency situation.

The collateral mission that will undoubtedly receive attention for the CV–22 will be Combat Search and Rescue. Though there have been some difficulties operating on the ground under a hovering CV–22, it will provide an outstanding CSAR platform.[26] Based on the author's experience during the Persian Gulf War, the first few hours after a pilot is shot down may be the best, and in some cases, only opportunity to rescue him. The ability of the CV–22 to dash in and recover an airmen quickly may mean the difference between success and failure.

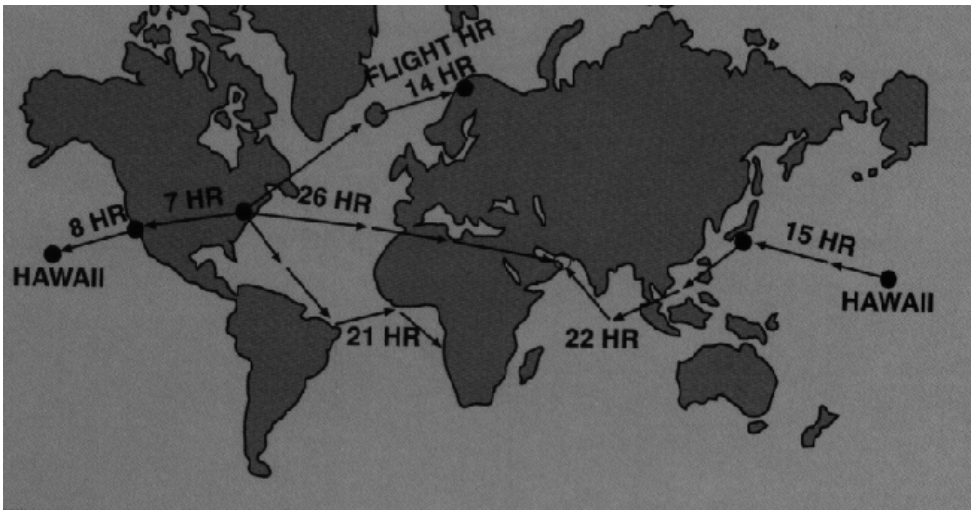

Figure 5. World map of CV–22 deployment capability.

The Liberian evacuation provides an example of where the range of the CV–22 may have obviated the need for a third nation to allow US forces basing privileges.[27] The lift limitations may have prevented the Osprey from evacuating 2000 people, however the 400 Americans could have been evacuated from as far away as Florida. The reliance on third nation basing is often a limiting factor in the use of SOF helicopters. There are an infinite number of cases in which the Osprey can put SOF teams where no other aircraft can.

The bottom line is that the SOF aviation community is preparing to execute its primary missions with the CV–22. For the long range insertion of a small SOF team, whatever the mission, the capability of the Osprey is unsurpassed. The tendency that must be overcome is to assume the CV–22 will perform those missions in exactly the same manner as other aircraft did them in the past. The particular experience of the leaders and planners, be it helicopter or C–130, will certainly influence how that individual sees the role of the CV–22. Those officers involved with the CV–22 program must think about it as a completely new aircraft with its own advantages and disadvantages, at the same time remaining focused on the assigned missions.

Notes

[1] Colonel Richard Szafranski, "When Waves Collide: Future Conflict," *Joint Force Quarterly* (Spring 1995): 81.

[2] As quoted by General Carl W. Stiner, "the Strategic Employment of Special Operations Forces," *Military Review* No. 71 (June 1991): 6.

[3] Admiral David E. Jeremiah, Vice Chairman of the Joint Chiefs of Staff, "Melding Special Operations With Forces of the Future," *Defense Issues* Vol. 7 No. 7 (March 1992): 4.

[4] Ibid.

[5] United States Joint Chiefs of Staff, *Joint Special Operations Operational Procedures*, JCS Pub 3–05.3 (Washington D. C., August 1993), I–1.

[6] Ibid. II–2.

[7] Richard P. Hallion, *Storm Over Iraq* (Washington: Smithsonian Institute Press, 1992), 227.

[8] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause; The Storming of Panama* (New York: Lexington Books, 1991), 126–130.

[9] Special Forces (SF) are not to be confused with Special Operations Forces (SOF). SF are commonly known as "green berets" (made famous by John Wayne in the movie of the same name) which were created primarily for unconventional warfare, and in the early days of the Vietnam war, assisted the South Vietnamese in their fight against the communist backed Viet Cong insurgency. The acronym SOF encompasses all Special Operations personnel to include, Air Force Special Operations units, Army Rangers, Special Forces, Army Special Operations Aviation units, Navy SEALs, Navy Special Boat units, PSYOP units, Civil Affairs units, and others.

Notes

[10] Philip Chinnery, *Any Time, Any Place: A History of USAF Air Commando and Special Operations* (Annapolis MD: Naval Institute Press, 1994), 199–207. An excellent, and relatively brief, first person account of the raid on Son Tay.

[11] *Joint Special Operations Operational Procedures,* II–1.

[12] Shelby Stanton, *Green Berets at War* (Novato CA: Presidio Press, 1985), 238–244. Blackjack Operations were just one of many campaigns waged by the SF against the Viet Cong in South Vietnam.

[13] *Joint Special Operations Operational Procedures,*II–5.

[14] United States Special Operations Command, *United States Special Operations Forces* (Macdill AFB, 1994), 21–33.

[15] Rick Atkinson, *Crusade: the Untold Story of the Persian Gulf War* (Boston: Presidio Press, 1993), 369–371,386–391. A detailed description of the SR plan used in Iraq.

[16] Much has been written on the Iranian rescue mission, but the best sources are those of the commanders involved, Army Colonel Charlie Beckwith who commanded the assault force that would have executed the actual rescue in Tehran, and Air force Colonel James Kyle, who led the air component and was the on–scene commander at Desert One, the site of the accident. See Charlie Beckwith, *Delta Force* (New York:Brace and Jovanavich, 1993) and James Kyle, *The Guts to Try* (New York: Orion Books, 1990).

[17] Major General James L. Hobson, Commander, Air Force Special Operations Command, "Ever Ready Air Commandos," and interview by Glen W. Goodman, Jr., *Armed Forces Journal International,* (May 1995), 22.

[18] Joshua Hammer, "Liberia: Into Anarchy," *Newsweek,* (April 29, 1996): 41.

[19] Air Force Special Operations Command, *AFSOC CV–22 Command Management Action Plan* (Hurlburt Field FL: AFSOC/XP, November 1995), 1.

[20] Ibid.

[21] Ibid, 12.

[22] Major Raymond Kruelskie, United States Special Operations Command, Plans and Programs, interview by author, 23 February 96, Macdill AFB, FL.

[23] Major General James L. Hobson, Commander, Air Force Special Operations Command, interview by author, 20 February 96, Hurlburt Field FL.

[24] Ibid.

[25] US Air Force, *Basic Aerospace Doctrine of the United States Air Force,* AFM 1–1 (Washington: March 1992), 14. Air force doctrine discusses the coordination of the infiltration and exfiltration mission flown in support of SOF teams in the deep battle, but does not address coordinating with teams once they are in place. JSOAs are used to prevent fratricide, not to coordinate the deep battle.

[26] Major Brendan Clare, Chief of Weapons and Tactics, Air Forces Special Operations Command, interview by author, 6 February 96, Maxwell AFB, AL. The flight tests to date have demonstrated a problem operating a hoist or rope directly beneath the Osprey because of severe downwash. A helicopter normally has a relatively null area underneath the center of the rotor system. The Ospreys two rotors are slightly canted inwards for stability, but that eliminates any null area underneath. The problem is not

insurmountable, and solutions being considered include adding weight to hoist equipment, and or eliminating the inward cant of the engine nacelles.

[27] Major Brad Webb, interview by author, telephone conversation, Montgomery AL, 21 May 1996. Major Webb was the flight lead aircraft commander on the first helicopter into the American Embassy in Monrovia, Liberia. He believes that the requirement for third nation basing as they used in Sierra Leone may be a critical limitation in some circumstances.

Chapter 4

New SOF Mission Areas

> *As the endlessly varied, kaleidoscopically changing succession of equipment employed in war indicates, technological inventiveness has always played an important role in military affairs.*
>
> —Martin Van Creveld

The true value of technological developments cannot be exploited unless the boundaries of mission areas are least explored, if not actually crossed. That does not mean that the existing missions can be forgotten. They have been assigned as such because they must be accomplished. On the other hand, there may be other missions that, in the past, were not attempted because of a technological shortfall. It is possible that a new development procured by one group can perform another group's mission better than they can. When considering the value of any scientific advance, it is a worthwhile exercise to think beyond the limitations of the established conventional mission areas.

In the case of the CV–22, this means considering applications that are outside the purview of the five principle SOF functions discussed in the previous chapter. If there are areas that the Osprey can make contributions in new ways, SOF doctrine should be adjusted to allow it. It is often very difficult to move into another organization's area, without the appearance of an invasion of turf. Military leadership tends to be quite protective in such issues, because responsibility for particular missions are the basis of

argument for force structure and its associated budget. All the more reason for those issues to be considered early, before a new system is operational, so that the appropriate doctrinal changes can be made. The long lead time between conception and operation of a new system means "that planning has to commence years in advance and involve educated guesses concerning the nature and effect of devices which, as yet, exist only on the drawing boards or simply as semi–articulated ideas in the minds of inventors."[1]

The first place to press the envelope concerning SOF responsibilities is the rapidly changing global political situation. When discussing the post Cold War era, General Carl Stiner, former Commander in Chief of USSOCOM, said that "drives for regional hegemony, resurgent nationalism, ethnic and religious rivalries, rising debt, drug trafficking, and terrorism will challenge the international order as it has seldom been challenged before."[2]There are certainly no shortages of sources for conflict; it is the nature of conflict that will be changed in the next millennium. The United Nations or other regional security organizations will probably play a greater role in global security issues, and US forces will, therefore be called upon increasingly in peace operations.[3]

What are the requirements of peace operations that might call for a technology such as the Osprey? These operations have become as much a police function as they are a military one. The enforcement of no–fly zones in southern Iraq or Bosnia are examples. There are no military objectives in the conventional sense. The political objectives are to prevent anyone from breaking the rules, and the resultant military objective is to enforce the rules in a constabulary fashion. The rules can be a result of a United Nations resolution, or any decree issued by a coalition security organization. They may be based simply on the independent policy decisions of the US. The object is to keep all involved

parties from violating them. It is similar to the role of a city cop or state trooper, whose presence provides a deterrent to criminals, and who monitors events, then arrests those who break the law.

The problem with enforcing no–fly zones is the difficulty in pulling a violator over to issue a ticket. Often the only recourse is to engage and destroy the offending aircraft. That is akin to acting as judge and jury without a trial, and is politically acceptable if the offending aircraft was just seen dropping bombs, but may not be acceptable if the aircraft was a helicopter sneaking from one village to another. For all anyone knows, there was a pregnant women on board being taken to a doctor. For this reason, helicopters were left alone in Bosnia, challenged only by a verbal warning on the radio which usually was ignored.[4]

The Osprey could be very effective in acting like a state trooper. With a small team of "police" in the back, they could respond to intercept helicopters, only with options between ignoring them or shooting them down. They could be followed to a landing, or forced to land, after which the circumstances could drive the response. If it really is a pregnant woman, like a police officer, the Osprey crew helps her to the doctor; if it is carrying ammunition in violation of a United Nations resolution, the crew and cargo are detained. The speed of the CV–22 and its sensor capability make it a natural vehicle for such an operation. Helicopters have a difficult time catching other helicopters unless they happen to be pre–positioned along the appropriate route

The same concept could easily be applied to counternarcotics scenarios. The use of small turbo–prop aircraft to smuggle narcotics is quite common, and similar to the previous scenario, shooting them down is not normally politically feasible. It is difficult, if

not impossible, to prove that there are narcotics on board. As in the scenario above, these planes could be followed to their landing, taking advantage of the Osprey's ability to land immediately next to them, after which, the situation evaluated for violations. Obviously, the problem of detecting aircraft still exists in this scenario just as it does currently.

Along the same vein of police operations, the speed and vertical landing capability of the CV–22 may allow it to act as a counter battery asset for artillery or mortar positions, again with actions short of simply destroying them with airpower. It has been demonstrated that destroying them from the air can be very difficult. If the locations of such positions can be determined, the Osprey with a small team could rush in directly on top of the site to surprise and apprehend the violators. The threat in the proximity of the site may limit this capability, but in some instances, this method would be very successful. Helicopters could potentially serve the same purpose if they could be positioned close enough, but the CV–22 could get there twice as fast. The ease with which some of these weapons can be moved make the response time critical. Portable weapons are used primarily for that reason. The Osprey will, in many cases be the fastest method of putting forces directly on top of these sites.

The "CV–22 as a constable" idea can be carried in many directions. One officer at US Central Command/Operations suggested using the same technique to carry inspectors on surprise inspections of nuclear or chemical facilities.[5] The fundamental premise is that tiltrotor technology provides an aircraft that can vertically land at a crime scene, or at the point where a violation has occurred, exactly like a helicopter, except it can respond in half the time because of exceptional speed. Most urban police forces around the world operate helicopters because of this capability. They provide overhead surveillance,

communications, or deliver forces immediately on the scene. However, their jurisdiction is relatively limited, usually no more than ten or twenty miles form one location to another. In international peace operations, the jurisdiction is often an entire nation, which may require very long range communication and transportation.

Police operations are not "sexy," and have never been at the top of anyone's list as desirable missions. But, in effect, the increase in peacekeeping operations in recent years has increased the need for these skills. It is true that there must be a trade off between these new missions and USSOCOM's assigned responsibility. The limited number of assets, Ospreys as well as all others, will prevent an unending expansion of responsibility. Priorities must be developed, but all the possible capabilities of every system must be included when the list is built. If peace operations are the first political priority, then they should probably remain high on the military priority list as well. Of course, the civilian leaders must be made aware of the reductions in readiness for conventional wars that must be accepted to prepare for peace operations.

Humanitarian operations are an area in which SOF ground forces have historically been involved because of their cultural aptitude, as mentioned in the previous chapter. However, SOF aircraft have not normally been associated with these operations.[6] Normally, the threat in humanitarian operations does not justify the need for the unique capabilities of SOF aircraft. Therefore, supplies are flown by conventional aircraft, and medical evacuation (medevac), if not provided by the host country, will also be conventional aircraft.

The CV–22 may provide some unique capabilities that are especially valuable in a situation with a military threat. Scenarios that require air–dropping humanitarian relief

supplies like food or medicine, have had significant drawbacks in recent years. During PROVIDE COMFORT in northern Iraq, supply pallets were dropped to Kurds, and became more dangerous then they were worth after people were killed by pallets dropped on them.[7] In Bosnia, supplies were dropped individually so as not to endanger people on the ground. In this case, the supplies became scattered across the countryside, making it very difficult to pinpoint people for whom the aid was intended.[8] The CV–22, like a helicopter, could place these supplies precisely where they are needed, without undue risk to the target population. The advantage over the helicopter is the ability to go farther during darkness, as mentioned previously, if there is a threat. The disadvantage of the Osprey is the relatively small payload, however with 100 percent of materials going to the target, the overall requirement is less.

Humanitarian operations often require medevac capability as well. In these situations, if an aerial medevac is called for, time is usually critical. The speed of a tiltrotor make it a natural medevac aircraft in humanitarian operations or in any medevac situation. This will certainly be a natural evolution for the V–22 line as it moves into the civilian market.

Civilian application is a certainty in the future for the V–22. City center to city center transportation has long been considered a potentially huge mission area for the V–22 to reduce congestion into crowded city airports.[9] Independent tiltrotor designs are being investigated in Japan and in Europe, though once production is begun in the US, there will certainly be a market for it in the civilian sector. An advantage to dual–use technology such as this, in addition to the obvious cost savings, will be the ability of the CV–22 to blend into the civil tiltrotor environment. This cover may prove very valuable in any number of mission areas that require operations in politically sensitive situations. The

appearance of military aircraft over an urban environment may jeopardize a SOF mission in some cases, where an Osprey in civilian markings may be able to operate. Doctrinally, this is only possible with appropriate training for crews, to allow them to operate in this environment without losing that cover.

The final potentially new area for discussion here is the need for fire support in many of the SOF missions, be they the original five or any new ones. If, as this paper argues, the CV–22 will be able to reach targets that no other platform can, then there will also be no platform in the SOF inventory to provide dedicated armed escort. There are certainly situations if the targets are known prior to execution that conventional fixed wing attack aircraft may be perfectly suitable. In some threat environments, the AC–130 will continue to provide excellent fire support, especially as it continues to receive defensive modifications that make it more survivable.

The problem is in the target area, as the CV–22 transitions to the helicopter mode and into hovering flight. This is the point at which it is most vulnerable, and the point at which an intelligent foe will attack. This element of a mission profile will be very similar to a helicopter in the same situation, and there are techniques that have proven effective in dealing with threats.[10] They involve an aircraft that can fly in formation and provide immediate suppression. Since the Osprey will most likely operate without other support aircraft, because of its unique flying characteristics, it will usually have to defend itself. Traditional escort aircraft do not have the ability to penetrate at night, at low level, in marginal weather, using terrain following systems. The chin mounted, pilot controlled gun on the CV–22 is one potential solution, though it will be very limited. There will undoubtedly be a need for more firepower in some cases. Weapons technology is such

that it would behoove USSOCOM to begin looking at systems that could strap on to a CV–22 to make it a viable armed escort platform.

Certainly, adding new responsibilities will stretch SOF even farther than they are today,[11] but if these new tasks must be performed by someone, SOF have historically proven their ability to be flexible and adaptive. The ability of the Osprey to push SOF toward new mission areas also pushes them toward a re–prioritization of missions. Many of the skills required for the suggestions made here are the same as the ones required for the five principal responsibilities discussed in chapter three; therefore, the training issue will not require a major revision. It will be the operational focus that must be adjusted to assure the most important national security requirements are receiving the most attention from the combatant Commanders in Chief.

Notes

[1] Martin Van Creveld, *Technology and War: From 2000 B.C. to the Present*, (New York: The Free Press, 1993), 230–231.

[2] General Carl W. Stiner, "US Special Operation Forces: A Strategic Perspective," *Parameters* 22 (Summer 1992): 3.

[3] Colonel Richard Szafranski, "When Waves Collide: Future Conflict," *Joint Force Quarterly* (Summer 1995): 77–84. The conflict discussed here is a result of the instability created by the end of the Cold War, and will result in the requirement of new ways of countering them. According to Szafranski, naval power will be critical in order to project influence globally, the US will exploit space, and SOF will be responsible for killing precisely and reliably while the bulk of US military forces concentrate on peace operations.

[4] While sitting Search and Rescue alert for air operations over Bosnia, the author listened to repeated nightly warnings to helicopters over Bosnia that went unheeded. For all intents and purposes, helicopters were free to roam over Bosnia providing supplies and intelligence to all sides of the conflict.

[5] Major Louis A. Caporicci, US Central Command/ Operations Plans, interview by author, 23 February 96, Macdill AFB, FL.

[6] The author recognizes that there are some notable exceptions to this statement to include the use of MH–53 helicopters that provided medevac and relief supplies to Kurds during operation PROVIDE COMFORT in northern Iraq after the Persian Gulf War in 1991.

Notes

[7] Major Alan Bridges, US Air Force Academy, interview by author, 28 March 1996, telephone conversation, Maxwell AFB, AL. Major Bridges flew MH–53s during this operation and saw first hand the problems with trying to provide bulk supplies to the Kurds. MH–53s were also used to move relief items within northern Iraq but did not have the range to repeatedly bring them directly form Germany or England.

[8] Tom Post, "Torn Between Hearts and Minds," *Newsweek* 121 no. 11 (March 15, 1993): 43. And Frederick Painton, "High Altitude Help," *Time* 141 no. 10 (March 8, 1993): 36–37. Both of these articles describe the problems with accurate targeting of relief supplies dropped into Bosnia.

[9] Vincent P. Grimes, "V–22 Osprey: A Rising Phoenix," *Military Technology* 17 no. 6 (June 1993), 75. discusses the different potential variations of tiltrotor technology once the US Marine Corps and USSOCOM begin production. It is likely that the civilian sector will soon place orders for them once the US military has spent the funds for design, test and development.

[10] Air Force Special Operations Command, *AFSOC, The Air Force's Proponent for Personnel Recovery and Foreign Assistance,* White Paper (Hurlburt Field, FL: HQ AFSOC, February 1996). In this paper, AFSOC makes an argument for a dedicated escort aircraft for helicopters in the same situation. Armed helicopters have filled this role in the past , as far back as Vietnam, when Air Force SOF helicopter units were combined units of lift platforms and gun platforms. The Osprey should operate effectively under the same concept, the AFSOC argues for the addition of dedicated A–10's to fill this role.

[11] Major General James Hobson, Commander, Air Force Special Operations Command, "Ever Ready Air commandos," interview with Glen W. Goodman, *Armed Forces Journal International* (May 1995), 22. General Hobson's primary concern is the operations tempo of his forces. Adding new missions would require a decrease in other areas to maintain sufficient training and recovery time for personnel.

Chapter 5

Conclusion

> *"What," fumed one irate cavalry officer, "replace the horse with a tank? Why you might as well attempt to replace our railway system by lines of airships."*
>
> —Maj Gen I.B. Holley, USAFR

Attempting to change the mind set of professional, trained, military leaders can prove to be a daunting challenge. Experience is always one of the most valuable sources of information for use in decision making. However there are often occasions when experience must be measured against creative thinking and innovation. When a technology as fundamentally different as the Osprey is offered, it is critical that those charged with bringing it into the force consider how its unique capabilities can best be used *before* the system is operational. Doctrine must be a conscious balance of experience and theoretical application in order to provide effective guidance. In these times of tight defense budgets and "do more with less" attitudes, there is not sufficient time to let a new system evolve after it is procured.

The Title Ten missions assigned to USSOCOM are not likely to change in the near future, and SOF must stay focused on them. However, SOF doctrine must continue to evolve and "continuous updating is needed to provide a framework for future special operation force structure and modernization decisions."[1] It must be flexible enough to

allow SOF to work independently, and at the same time ensure effective integration with conventional forces. Doctrine must allow for innovative approaches, yet still provide guidelines for execution based on the lessons of history and the best predictions of future political and military contexts.

SOF, as well as airpower, will be the most often be the military tools chosen to handle future contingencies due to the post Cold War political situation. US civilian leadership will wish to appear strong in eyes of the world and of the American populace, but will be hesitant to place US citizens in harm's way. Airpower and Special Operations are effective methods of displaying resolve, and achieving political objectives, without the risk of high casualties. SOF will become even more important as a purely strategic weapon. Colonel Richard Szafranski predicts that USSOCOM will become " the jewel in the military's crown."[2] The ability of the CV–22 to place SOF virtually anywhere in the world will continue to blur the distinction between the tactical level of war and the strategic. Tactical decisions made by SOF operators will have larger and larger strategic implications in the next century.

The following recommendations are a first step towards this important goal. It is crucial that the officers charged with the development, procurement, test, and evaluation of the SOF Osprey consider the doctrinal implications of the aircraft before the first crew is trained. That process is ongoing in many parts of the SOF community, and in the remaining elements of SOF that will be affected by the Osprey, it is time to start .

First, with CV–22s based in the United States, in Europe, and in the Pacific, the need for forward basing will be reduced greatly. Currently, the use of a "friendly" airfield near a target state is often a limiting factor in where and when SOF can insert teams on an

objective. The ability of the Osprey to use strategic refueling prior to entering denied territory, then use SOF MC–130 Combat Talons for refueling inside, means that the Osprey can reach almost any region in the world from home base in less than one day. (See Figure 5 and Appendix B) Operational security problems will be severely reduced by not using a third nation staging base for long–range operations. Also, the infrastructure maintained by USSOCOM to operate and support forward deployed staging bases will be reduced.

Second, SOF have become so joint, by definition, that operations are designed jointly as a matter of course. To achieve the maximum potential of the Osprey, there must be provisions in SOF doctrine to use the Osprey exclusively in some cases. It has the ability to go places that no other aircraft can go, and to get to some others before any other aircraft can. For example, if the operation is planned jointly to use Ospreys along with Army SOF helicopters, either as gunship escort, or additional lift assets, then the mission becomes limited by the range and speed of the helicopters. In most cases, to completely exploit the capabilities of the Osprey, it must be used independently of other types of aircraft. That does not preclude USSOCOM from training crews to operate jointly for those situations in which the available lift is the primary restriction, rather than range or speed. SOF doctrine should be flexible to operate both ways. Along these same lines, the sling load capability that the Marine Corps plans to take advantage of, is not useful in SOF, because it takes away the Osprey's speed and range advantage.[3] In this mode, it becomes an oversized helicopter with all the same limitations of a helicopter, plus the limitations of the Osprey.

Third, the use of a very large force to establish communication and transportation links on an airfield in a target country should no longer be the default method of going deep into denied territory. The CV–22 will, in many cases, eliminate the need to use a combination of heavy transports and SOF helicopters to move an assault force to and from a target. The Iranian hostage rescue mission discussed in chapter three is the perfect example of this requirement, and has become a standard doctrinal procedure for large, long–range operations. In that operation, the helicopter force was to have moved the assault team and the hostages out of Tehran to a remote airfield outside of the city which had been secured by Rangers, who would then board C–141 transports for the flight out of Iran. That complicated scenario will be simplified greatly by CV–22s that can go directly to the target, then out of the country in the same night.

Fourth, and related to the recommendation above, force structure issues should be addressed to reorganize SOF based on these doctrinal implications. The need for three Ranger battalions, whose primary responsibilities are airfield seizure and target security, should be reevaluated if it is determined that these functions will be required less often. Perhaps only two battalions are required. Or perhaps, their primary responsibilities should change. It has been suggested that Rangers would make excellent Special Reconnaissance operators, which would leave Special Forces free to concentrate on missions that require their cultural skills.[4]

Fifth, the US Air Force and USSOCOM need to develop better methods for coordinating, rather than simply deconflicting their operations in the deep battle. The mobility of SOF in the enemy's rear is already significant and will be made even more so by the CV–22. The actual insertion and extraction missions are integrated quite well as

long as they are done with some type of aircraft. But if over land insertion methods are used, and once the team is in place, the coordination consists solely of blocking out the SOF operating area to strike aircraft. The process of changing that system should begin with an improved electronic capability for SOF on the ground in the rear areas. Once these teams are beyond the geographical boundary of a surface unit, they should have some way of being constantly monitored by airborne command and control platforms, as an aircraft would. The other method of integrating the two would be to place SR forces under the control of the Air component. If the Air Component Commander is responsible for the deep battle, the SR forces operating there should be under this control. It is an analogous situation to Close Air Support aircraft working in the Surface Component Commander's area being under the control of a ground element.

Sixth, USSOCOM should evaluate its role in peacekeeping and consider the role of airborne constable. The CV–22 provides some very unique capabilities that no other aircraft have in this area, and short of the United Nations purchasing Ospreys for that very purpose, no other force will have that capability. The extensive use of SOF in other facets of peace operations make them a logical choice to perform this mission as well. SOF will usually have physical infrastructure and communications in place early in any US peace operation that will be capable of supporting CV–22 operations. Also the cultural, medical, as well as special tactics expertise of SF, make them an excellent choice as a force to act in this manner.

Finally, USSOCOM should investigate the need for an armed escort for the CV–22 that allows the unique speed, range, and vertical landing capabilities to be exploited. The Marine Corps is already considering a variant of the V–22 designed with short range air–

to–air missiles, and as a potential Close Air Support platform.[5] The concept of armed escort dedicated to the SOF mission has been proven repeatedly in history. Close escorts can respond immediately to counter threats to the Osprey in the critical phase of transitioning to the hover or landing mode. In some cases, this may be accomplished with the CV–22's own chin mounted gun, but may require a specially modified gunship version of the Osprey. The other option, proposed by Air Force Special Operations Command, is the addition of some A–10's to their inventory primarily for this purpose[6]. With external fuel tanks, the range and speed of an A–10 is complementary to the Osprey. Flying in formation with the CV–22, the A–10 could take advantage of the Osprey's navigation and penetration capabilities during ingress. The 30mm cannon alone would be sufficient to squelch the threat in many special operations scenarios.

There has been much written on the value of the V–22, and whether or not it is worth the cost. The budget debates have dragged the program out for more than a decade. The fact is that the V–22 is now on the way, and the arguments over whether or not that is a good idea should end. It is time to start thinking about how it can best help provide for national security. There will a tendency for the officers charged with this responsibility to rely too heavily on their experiences with either helicopters or C–130s. It is critical that the Osprey be perceived and treated as a completely new and different machine with unique capabilities. The argument over the decision to procure the Osprey will be settled after it has been in service for some years. If it is employed properly, with vision and forethought, without the mental baggage carried from previous SOF aircraft, then papers will be written arguing for more of them. If the opposite is true, papers will be written on what a poor replacement the CV–22 was for a Pavelow or a Combat Talon.

Notes

[1] General Carl W. Stiner, "US Special Operations Forces: A Strategic Perspective," *Parameters*, 22 (Summer 1992): 12.

[2] Colonel Richard Szafranki, "When Waves Collide: Future Conflict," *Joint Force Quarterly* (Spring 1995), 81.

[3] Frank Colucci, "Projecting Military Might," *Tiltrotor Aviation*, a special supplement to *Rotor & Wing* (1995), 5. The #3 prototype was tested carrying a 4000 lb. sling load at speeds up to 174 knots. This is faster that most helicopters can fly for extended periods, but does negate most of the speed and range advantages of the Osprey.

[4] John Collins, "Roles and functions of US Special Operations Forces," *Special Warfare* 6 (July 1993), 23. Mr. Collins is a senior specialist in national defense at the Library of Congress, and he argues that the SR mission needlessly risks the special cultural and language training received by SF, and might be performed more efficiently by Rangers.

[5] Vincent P. Grimes, "V–22 Osprey: A Phoenix Rising," *Military Technology* 17 no. 6 (June 1993), 75.

[6] Air Force special Operations Command, *AFSOC as the Air Force Proponent for Combat Rescue and Foreign Internal Defense*, A White Paper (1995).

Appendix A

Chronology Of Events

1950's	Tiltrotor technology is developed and tested on the Bell XV–3 and the Boeing VZ–2 aircraft.
1972	NASA and the Army contract with Bell and Boeing to develop two prototype tiltrotor aircraft; the result is the XV–15.
1979	XV–15 made its maiden flight.
1981	SECDEF creates the Joint Services Aircraft Program (JVX) and designated the Army as the executive agent for the JVX program; original buy was to have been 1213 aircraft.
1983	Army backed out of the program and Navy was designated executive agent; the Defense Resources Board approved full funding for research and development.
1985	Aircraft was designated the V–22 Osprey; full scale development began
1986	Programmed buy was reduced to 657 aircraft. Full scale development began with plans to build six prototypes.
1987	Preliminary design phase was completed.
1989	First flight of the V–22; SECDEF Cheney cancels the program citing budget constraints.
1990	Congress forces the DOD to fund research and development and preserve the option for 12 pilot production aircraft. V–22 team wins the Collier Trophy, given by US National Aeronautic Association for the greatest achievement in aeronautics.
1991	Congress authorized specific funding for the Air Force Special Operations variant of the V–22. Prototype #5 crashed on its maiden flight.
1992	Production funding for the V–22 is again added to the defense budget. prototype #4 crashes into the Potomac river, killing three civilian and four military crew members.
1993	All V–22 testing is consolidated at the Naval Air Warfare Center, Patuxent River, MD.
1995	Work proposal is submitted for the SOF version, the CV–22.
1996	Projected buy is 523 aircraft; 425 MV–22's for the Marine Corps, 48 HV–22's for the Navy, and 50 CV–22's for the Air Force.

Appendix B

Aircraft Characteristics

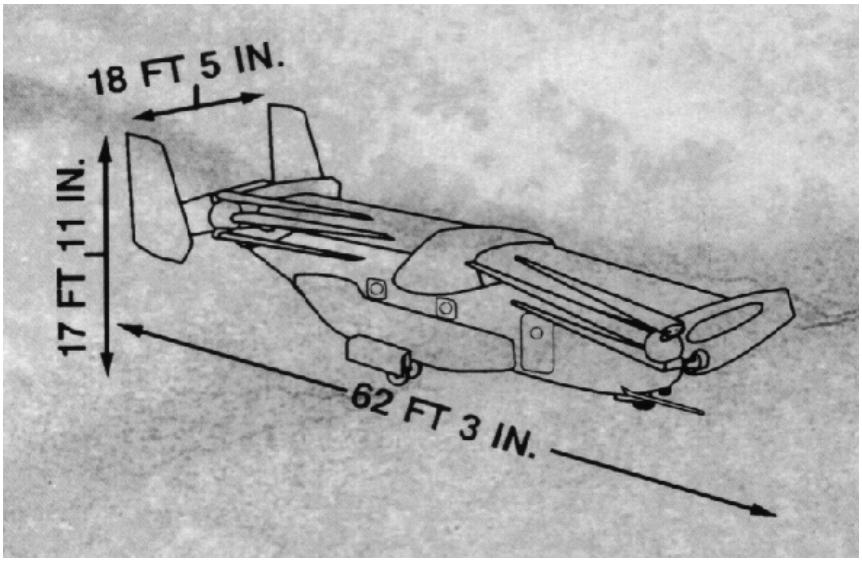

Figure 6. Side and front dimensions.

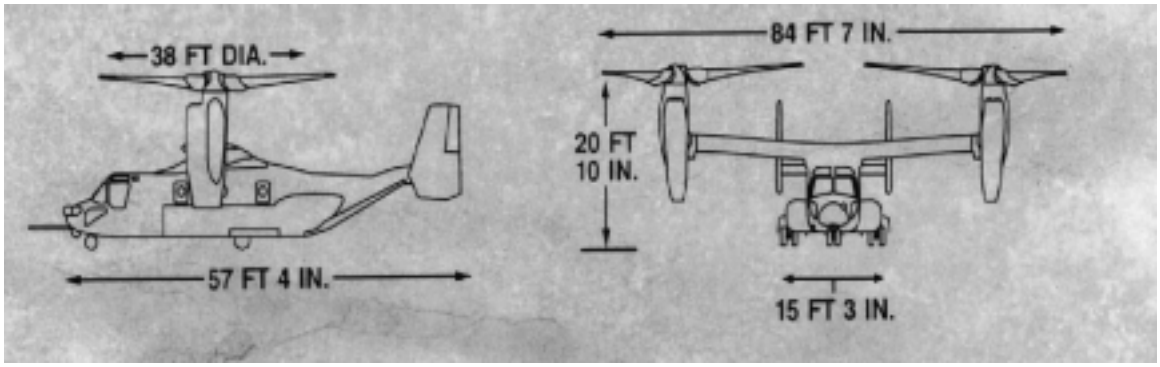

Figure 7. Folded dimensions.

Aircraft Range:	2100 nm unrefueled unlimited with air refueling
Service Ceiling	26,000’
Hover Out of Ground Effect(OGE)	14,200’
Combat Radius w/ 24 Troops	500 nm
Maximum Speed	275 knots
Cruise Speed	240 knots
Cargo Capability	20,000 lbs internal 15,000 lbs from cargo hooks
Aircraft Empty Weight	32,616 lbs
VTOL Weight	55,000 lbs
STOL Weight	62,500 lbs
Fuel Capacity	2015 gallons engines: two T406–AD–400 Allison; 6150–shaft horsepower

SOF version; CV–22 – Will be the basic Marine MV–22 with the addition of a terrain following/terrain avoidance radar, extended range internal fuel tanks, additional radios, advanced radar warning receiver, infrared jammers, radar jammers, laser warning receiver, ramp guns, a turreted .50–cal GAU–19 nose gun, and retractable refueling probe. Additional costs will be $7–9 million per aircraft.

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